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THE
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☞ See Advertisement on last page.

POETRY.

Written for the Scientific American.

TRUTH SHALL PREVAIL.

BY R. MACFARLANE.

Let falsehood's waves dash,
In ceaseless roll,
Like an earthquake's crash,
Wild on my soul.
Be firm my heart,
Brave the wild storm,
Strong faith shall ne'er depart,
Though left forlorn.
Calumny's spite,
May wound awhile,
Yet will the honest right
Triumph o'er guile.
Though fortune lower
Dark on the sky,
Truth never will cower—
Be thy hopes high.
False friends may leave—
Cold pass thee by ;
Yet do not sigh and grieve,
True friends are nigh.
Though gaudy wealth
May not be thine,
If thou hast bread and health,
Never repine.
Young hearts, young eyes,
Weep not for scorn,
Look to the bright skies,
Cease you to mourn.
Truth is breaking
Shackles of wrong,
Righteousness is waking,
Victory ere long.
Cradled in Truth
Never to quail,
Falsehood shall sink forsooth
Truth shall prevail.

LIFE'S LESSON SHOULD BE.

BY B. HALLECK.

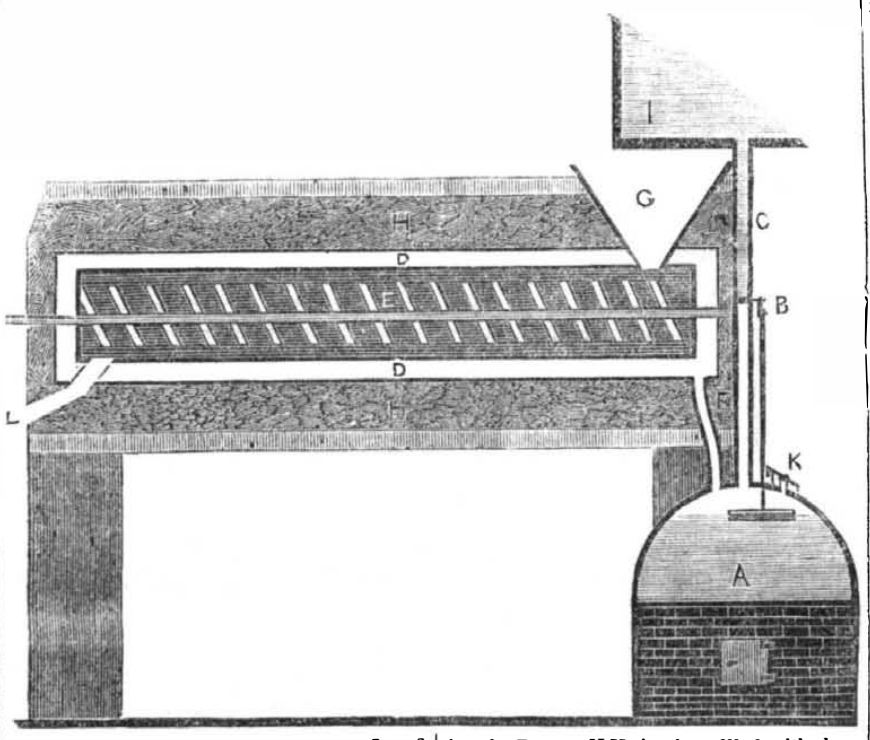
Forget not—regret not
The joys that have fled,
Though sweeter and fleeter,
Than fresh odors shed
From the jessamine's cup,
Or the bright chalice hid
From the gaze of the sun
'Neath the violet's lid.

Forget not—regret not ;
Hope ever should burn
The incense of love
In her funeral urn,
Shedding glory and light
O'er the gems of the past,
By time on the altar
Of memory cast.

Forget not—regret not ;
Why should we regret,
While one star remains,
That another has set ?
And though all may have faded,
Others brightly by far
Through the gloom may rise
Than the once worshipp'd star.

Forget not—regret not ;
Life's lesson should be,
Like the stars that are hung
O'er the limitless sea,
A guide to our path,
Brighter links of the chain
To lead us and bind us
To virtue again.

KENNY'S STEAM CORN DRYER.



This Corn Dryer is the invention of James Kenny, of Maumee City, Ohio, and what he claims as his invention is the successful application of drying grain by steam, instead of fire heat, and also the simple and economical application of that heat. The above engraving our readers will refer to, as illustrating the structure of the machine and its mode of operation. A, represents a steam boiler with its safety valve K. B, is the feed valve which regulates the quantity of water in the boiler by the float in it, which rises as the boiler fills and shuts B, or sinks as the water decreases and opens B, which admits water from a cistern above by the water pipe C. G, is a hopper for admitting the grain into the Dryer, where it is continually kept in motion by the screw passing in at front by the hopper and gradually expelled in a dry state by the screw through the canal L. The screw may be driven by a belt from a horse power, or steam or water power. D D, is the steam pipe for heating the Dryer. H H, is a box filled with charcoal dust to economise the heat of the Dryer. an excellent plan, charcoal being such a good non-conduotor.

The utility of thls invention is apparent and will be appreciated at a glance, as the engraving explains its uses almost without a word of comment. Mr. Kenny says that he maines some of his Dryers of different proportions from the one here represented. He has a drying cylinder of 10 inches diameter and 30 feet long, and the steam pipes may be made of any diameter most suitable. The screw is propelled so as to make about 12 revolutions per minute. The shaft of the screw is 1 inch in diameter and the buckets or threads of the screw are made to make four circumferences each foot length of the screw. The chamber of the Dryer is made of sheet iron, and the whole machine can be got up at but little expense, as it is very simple. Mr. Kenny has taken measures to secure a patent.

The Irishman who put the Horse into the Wagon.

A few days since a gentleman in Worcester county, Massachusetts, who employs several Irishmen in cultivating his grounds, ordered one of his men to put his horse into the wagon. After a short absence, Pat returned, exclaiming, "I've got him *in* sir, but it was a mighty hard job tho'!" This answer somewhat puzzled the gentleman, who upon going into the yard found his horse actually standing up in the wagon trembling with fear at his elevated and unsafe position.

Court Quick.

A gentleman was one day arranging music for a young lady, to whom he was paying his addresses. 'Pray, Miss D.' said he, 'what time do you prefer?' 'Oh,' she replied, carelessly, 'any time will do—but the quicker the better.'

Serious Consideration.

An unmarried lady on the wintry side of fifty, hearing of the marriage of a young lady, her friend, observed with a deep and sentimental sigh, "well, I suppose it's what we all must come to."

A son of Erin once described a snake in this manner: "He is a venemous baste; he has nather hind forè legs nor fore hind legs; he has an eye like a chicken, and goes crawling through the grass, and when you see him you are sure to run like blazes."

Maintaining the Dignity of the Profession.

Mr. Sergeant Davy, eminent in the last century, was once upbraided with lowering "the dignity of the profession," by accepting *silver* for fees from a client, instead of *gold*. "I took silver," he said, "because I could not get gold," *but I took every rap the fellow had*; and if you call that lowering the dignity of the profession, I don't know in what the dignity of the profession consists."

Mrs. Partington's Last.

"Our prospects *is* very dark," said the baker, on the occasion of a recent rise in flour. "Yes," said Mrs. Partington, "and so is your bread; but," added that estimable lady, looking benignantly on him through her spectacles, "your loaves are *light* enough."

Absentmindedness.

The first Lord Lyttleton was very absent in company, and when he fell into the river by the upsetting of a boat, at Hagely, it was said of him that he had "sunk twice before he recollected he could swim."

There is a woman in the west who is so large round the waist that her husband can't hug her all at once; but when he takes one hug he makes a chalk mark, so as to know where to commence the next time.

A schoolboy being asked by his teacher how should he flog him, replied, "if you please, sir, I should like to have it upon the Italian system—the heavy strokes upwards, and the down ones light :"

LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending 21st August, 1847.

To Timothy Clark, of New Haven, Conn., for improvement in Safety Apparatus for steam Boilers. Patented August 21, 1847.

To Stanton Pendleton, of New Haven, Conn. for improvement in Fish Hooks. Patented August 21, 1847

To Job Johnson, of Brooklyn, N. Y, for improvement in Fish Hooks. Patented August 21, 1847.

To Elijah M. Harris and James Cleghorn, of Cass county, Georgia, for improvement in Cotton Thinners. Patented August 21, 1847.

To Samuel G Cornell, of Greenwich, Conn. for improvement in Lead Pipe Machinery.—Patented August 21, 1847.

For the week enaing August 28, 1847.

To Phineas Whiteside, of Weedsport, New York, for improvement in Cooking Stoves.—Patented August 28, 1847.

To Alva Gregory, of Pike, New York, for for improvement in the mode of heating wheel Tires. Patented August 28, 1847.

To Nathaniel Bosworth, of Troy, New York, for improvement in Cooking Stoves. Patented August 28, 1847.

To Alexander Turnbull, of England, for improvement in Turning. Patented August 28, 1847. Date of English patent, Sept. 26, 1486.

To Charles Walker, of Brooklyn, New York, for improvement in Mills for grinding Mustard, &c. Patented August 28, 1847.

To John Jones, of Bristol, Conn., for improvement in Curry Combs. Patented August 28, 1847.

To Christian Stoner, of Gettysburg, Pa., for improvement in apparatus for operating Carriage Brakes. Patented August 28, 1847.

To Samuel Shreve of Shreveville, New York for improvement in Cooking Stoves. Patented August 28, 1847.

To Amory Fisher, of Tuscaloosa, Alabama, for improvement in Mills for grinding Corn in the Cob. Patented August 28, 1847.

DESIGNS.

To Charles J. Shepard, of New York, for Design for Stoves. Patented August 28, 1847.

INVENTORS' CLAIMS.

Metalic frames for Pianofortes.

Invented by Timothy Gilbert, of Boston, Mass, Patented July 24 1847. What he claims is the combination of the cross bars with the longitudinal bars and straight and curved sides of the main frame, whereby the said cross-bars serve as supports to the same, in order to prevent the springing out of place literally, thus making the frame itself do all the work of supporting the strains of the strings and avoiding the employment of the usual bolts and wooden frame-work to which the iron frame is usually confined, the cross bar beneath the frame serving the purpose of an important support to the head of the frame, and also to the sounding board.

Centrifugal Pumps.

Invented by Allexy W. & Julius H. Von Schmidt, of Washington City, D. C. Patented July 24, 1847; they do not claim as their invention a rotary pump as they are now commonly constructed with the wheel working out of centre in the case, and letting the water into the case at the centre, but for taking water in between the centre of the wheel and the periphery near to the tangential discharge pipe.

Boiler Furnaces.

Invented by Daniel Griffin, of New York, Patented 31st July, 1847. What he claims therein as new, and secures by Letters Patent, is the forming of an opening or openings near the lower part of the ascending flue, in the chimney stack, in combination with the descending flue, to check the draught up the chimney, and thereby to detain the heated gases under pressure within a furnace.

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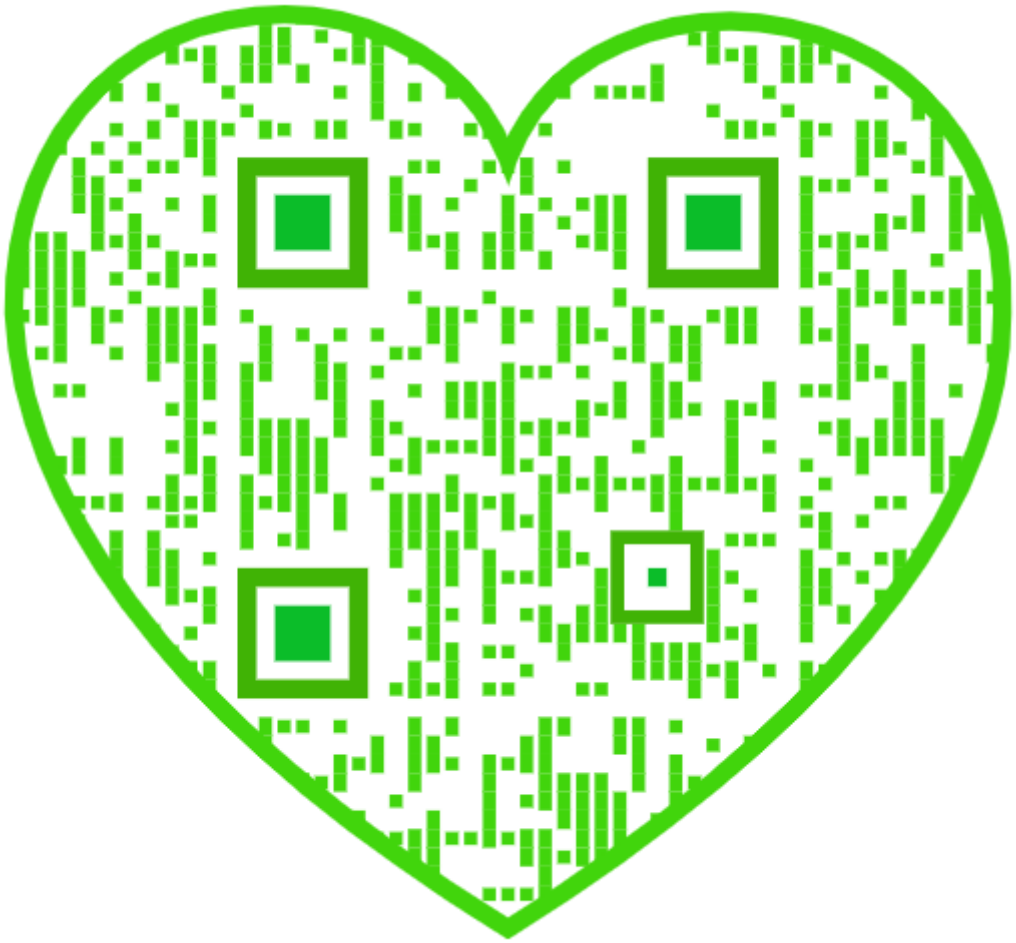

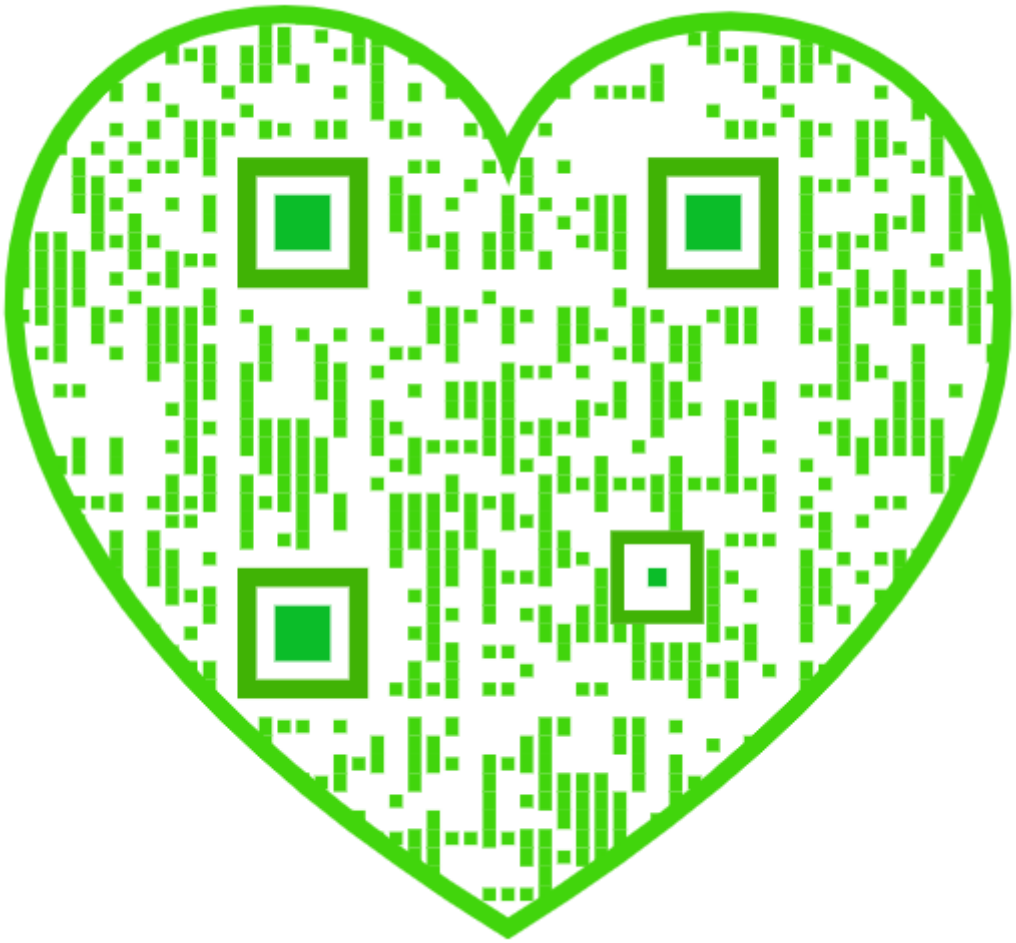

Canal Tolls and Capacity.

The Albany Atlas says the average rate of canal tolls per week the present season, for 12 weeks, is $150,000. At the same rates for the remainder of the season, say 16 weeks, the tolls will be $4,100,000. This would give over $1,000,000 for the public works. What is truly remarkable in connection with this large increase, and the present heavy receipts is the fact that the average freight of a barrel of flour from Buffalo to Albany, in July was less than it had ever been in that month, down to 1842. And in such good condition is the Erie canal, that boats make a passage from Buffalo to Albany in *less time* than they did in 1841, and carry *double the cargo!*

Profitable Speculation.

About a year since Boston capitalists got possession of the Michigan Central Railroad, which is now constructed from Detroit to Kalamazoo, and which will terminate, it is thought, at Chicago. The stock which then cost about $75 per share is now selling for $120, an advance of $45 in one year, which is a net gain to the stockholders of $990,000, the whole number of shares being 22,000 — The earnings for May were about $41,000. It is estimated that when the heavy track is laid over the road, the receipts will amount to $1-000,000 per annum, and pay a dividend of 15 per cent.

Perpetual Motion Discovered.

It is advertised in the Ohio State Journal that Mr. A. Frisbe has satisfactorily ascertained that lenses of different sizes can be so arranged as to act expansively upon ether, alcohol or mercury, which expansion shall be made to act upon any weight or springs, and keep machinery constantly in motion, provided the sun shines one day in the year.

This plan is not quite so good as attaching one of our Bob's kites to the earth's axis at the North Pole, and having the tail, which is made of india rubber, perform a continual waltz with Madame Moon.

Coal.

The Pottsville Miner's Journal says that the quantity sent away by railroad from that place last week was 34,249 tons, and by canal 7,366 tons, making an aggregate of 41,615 tons — Motive power was introduced on the West Branch Railroad on Monday week, and on Wednesday 659 cars passed over the scales, containing 3,097 tons of coal. This is the heaviest business ever done on the road in one day. Six locomotives are now running, but these are inadequate to the trade and the requisite number will be procured by the company as speedily as possible.

Pennsylvania Iron.

The various contracts made in that State to furnish iron pipes for the Boston Water Works amount in all, to between seven and eight thousand tons. Messrs. Merrick & Towne, alone, of Philadelphia, are filling up a contract for one thousand of the thirty inch pipe, to form the principal main between the pond and the city. A portion of the smaller pipe is cast at the furnaces in the interior of the State by which means the expense of re-melting the iron is avoided.

A Treasure in a Tea-Kettle.

A clerk in a hardware store in Cincinnati, put one hundred and fifty dollars in a tea-kettle for safe keeping, and while he was out of the way the master of the shop sold the kettle for seventy-five cents, not suspecting the treasure it contained. The customer was so well pleased with his bargain that he has not been seen at the same store since.

Oscillating Engines.

This is the name given to Stephenson's Locomotives, which are built with their cylinders projecting over the wheels. A great weight being placed on the extremities, causes them to leap and shake when pushed to any speed over 45 miles per hour

Portrait of Gen. Taylor.

The beautiful portrait of this brave General which is advertised in another column, is pronounced the most accurate likeness that has ever been taken. Great care has been used in getting up the engraving, and no expense spared in its execution, and the only reason for offering it so low is to insure an immense sale. Send in your quarters, halves and whole dollars, and you shall receive in return a likeness that will be an ornament for any parlor.

Florida Wine.

The Jacksonville, (Fla.) News of the 6th inst says:—"We learn from Col. McIntosh, of this country that he is making preparations to embark in a new enterprise—one which promises to develope new resources to the energy and industry of the planter of Florida. He intends to enter largely into the cultivation of the grape, for the purpose of manufacturing wine, and making arrangements to have a vineyard which will vie with any in the Union.

Cotton Factories.

The Mount Vernon Cotton Factory, at Alexandria, D. C., is in a fair way of soon being completed. The slaters have been at work on one of the outbuildings, and the other will soon be roofed. The proposed factory in Washington will no doubt be commenced ere long as the subscription list is steadily filling up.

Numbering Houses.

The houses and tenements bordering on the public streets in Paris are being re-numbered The operation consists in replacing the old numbers by plates of enamelled porcelain, white ciphers on a blue ground. These plates are set in the fronts of the houses as well as in the walls of enclosures, and confined there by bronze bolts.

A Novel Idea.

A proposition has been started in Philadelphia, to have a large iron tube, three feet in diameter, to extend from Port Carbon to Philadelphia, a distance of 90 miles, to convey coal from the mines at Port Carbon to Philadelphia. The expense is estimated at about fourteen millions of dollars, and there is sufficient descent to make it practicable.

Reaping Machines.

There are thirty-two Reaping Machines in St George's Hundred, Delaware, alone, and probably nearly 100 in the County. New Castle County presents one of the most improved and improving districts in the United States as to agriculture and intelligence. All which may be mainly attributed to free schools and the agricultural society of New Castle County.

Railroad Iron.

We learn that ten tons of beautiful Railroad Iron—the first ever made in this State—was drawn out of the Troy Iron and Rolling Mills last week. The iron manufactured was the T rail, designed for the Troy and Saratoga Road. We understand that in a few days the company will turn out from 25 to 30 tons a day.

Chicago Railroad.

The total cost of the Galena and Chicago Railroad, as estimated by Mr. Morgan, in his Report, which has just been published will be $2,648,000, or $14,553 per mile. This estimate is made for a single track, with bridges for a double track

Railroad Sunk.

Several rods of the Pittsfield and North Adams Railroad, in a swamp three or four miles this side of Pittsfield, have been for a long gradually sinking down, and within the last week has settled so as to be impassible by the trains, and at one time was under water.

Elegant Extracts.

It is indeed gratifying to behold the partiality which some people evince for our scientific matter, and this is a peculiar taste eminently displayed in Neal's Saturday Gazette: ostensibly original, however, in that paper.

A Rush for Knapp's Beverage again.

The warm weather of the past week has given a new impetus to the "beverage" business, and Knapp is again supplying families with his healthy temperance cordial, at 132 Fulton street (Sun Building.) Try it.

The Crops.

The most gratifying reports reach us by every mail of the almost overwhelming abundance of crops of all kinds. As a sample, we find in Ohio and Kentucky papers, paragraphs like this :—

"Never in the memory of man, have such crops of wheat, corn, &c., been seen as we have this year."

And Texas, New Orleans and other Southern papers, speak thus :—

"We hear from all quarters, that the crops never were finer, especially cotton and sugar. * * If an early frost does not interfere, the sugar produce of Louisiana this year will exhibit the richest yield of any one single agricultural product in any of the States of the Union."

The Steamer Washington.

It has been said that the great cause of the failure of this steamer to make a more rapid passage was that the paddle wheels were too large, making the engines labor hard, work slowly, and in bad weather irregularly; the quantity of back water was also so enormous that the ship's way was hindered. The paddle wheels are now being lessened, and it is hoped the desired effect will be produced; the vessel is also going through several other alterations and improvements.

We say that when a large sea-worthy and comfortable steamship makes an average passage at the rate of eleven miles per hour let her owners be contented, and the public also. The Washington is built to run well and carry a cargo, and her engines are calculated of drive her across the Atlantic at near about 11 knots per hour with good management.

The Guadalquiver.

This is the name of a new iron steamboat for the Havana trade, which arrived here last Sunday from England, under command of Captain Hoskins, late of the steamship Great Britain, wrecked in Dundrum Bay. The Guadalquiver is 600 tons burden, and is of a beautiful model. Her bulwarks when she has a full cargo on board are only three feet above the water's edge. Her engines are of 220 horse power. She comes here to have deck cabins added to her, as that sort of work can be done cheaper in New York than in London. She is to be employed under command of a Spanish captain, in the conveyance of passengers and light freight on the coast of Cuba.

The Mining Speculation.

The Lake Superior Mining Journal, published at Sault Ste. Marie, of August 21st, gives the names of 122 Mining companies, formed for mining purposes in the Lake Superior mineral region. The capital of their reputed stock of these companies is divided into 451,200 shares, and the directors of no less than 27 of them reside in New York.

Lake Superior Copper.

The propeller Goliah arrived a few days since at Buffalo, with 180 tons of native copper from the Cliff Mine, belonging to the Pittsburgh & Boston Mining Company. Among the masses was one marked 8,628 lbs. or 4 tons 628 lbs. which, with all the masses, are nearly or quite pure The shipments thus far this season from the American and Canadian mines amount to 524 tons of metal in all.

Union Magazine.

The September number of this splendid periodical has made its appearance, and for beauty of engravings and interest of reading matter has never been excelled by any former number. The engravings alone are worth twice the price of the work. Published by Israel Post, No. 140 Nassau street.

Rope Band.

Soft rope, the thickness of a man's finger, with an iron ring in one end, is recommended as a great improvement in bundling straw. Farmers who have tried the plan like it well.

Fire Engine for Turkey.

Mr. Hunneman of Roxbury, Mass. known throughout the United States, as a manufacturer of fire Engines, is now constructing a splendid machine for *Constantinople*, which it is said, will be the first engine ever used in that city.

Patent Agency.

Applications for Patents made at this office on the most reasonable terms. Neat drawings, specifications, and engravings of the first character, and cheaper than anywhere else. Notices of new inventions, Agency for the sale of Patent Rights, and all business of that nature, promptly attended to. Those who have patent rights to dispose of will find a good opportunity and field for their sale—such as Horse Power Machines and Waterwheels of every description. The largest circulation in the world for advertisements of inventions, &c.

Great Invention.

The Cincinnatti Times says:—A gentleman in this city, has discovered a plan by which he can send a man from this city to New York to transact business in two and a half hours, by a railroad which shall not cost more than three times as much as the Telegraph, including via-ducts and other et-ceteras. He can, he says, transport from Cincinatti to New York, in a day of ten hours, four hundred tons of merchandise, and at a cost not exceeding the usual rates, and that without steam or horse-power.

Well we should like to know something more about this plan, as it appears to be somewhat of a great impossibility.

New Mode of Manufacturing Gas.

We have been informed that a stove is now in successful operation at Mr. Andrew's store in Sixth street, Philadelphia, for making gas in a remarkably simple and economical manner, as heretofore noticed in the Scientific American. The stove is an ordinary one The gas is manufactured from American coal, and as the coke is subsequently used for heating the stove and manufacturing the gas, the cost of the gas is literally nothing. In manufactories, hotels, and public buildings, where a fire is constantly maintained, this plan will probably supersede all others.

Falls at St. Croix.

It is thought that an important town is soon to spring up in this place. It is but sixty or seventy miles, as ascertained by actual survey, from these falls to Lake Superior. There are now ten double and five single dwelling houses, a large store and public house building at the Falls. Mechanics are wanted at the place at the present time.

How to Read when on the Railroad

By holding a card over the line below that which you are reading, the eye is freed from the disturbance caused by the motion of the carriage, and you may read with comfort.

Female Operatives.

The Lowell Courier estimates that some fifteen hundred young women employed in the factories of that city are now absent on summer visits to their friends.

The valuation of property in Fall River, for the present year is estimated at $7,715,170 —an increase over the valuation of last year of $1,134,458. The population of the town numbers 11,646—an increase of 472.

A German writer calls a kiss "a delicious dish, eaten with crimson spoons." We suppose this is what is meant when it is said of a young fellow courting, that "he is after the spoons."

A pair of white Rats has been captured at Randolph, Vt. They are similar to the common rat only larger and more active. Their color is of a spotless white, their fur soft and downy, and their eyes red.

The quantity of beet-root sugar manufactured in France during the last six months, amounted to 52,695,424 killogrammes, being an increase of 13,343,670 kilogrammes upon the quantity made in the preceding season.

A law has recently been enacted in Louisiana for the establishment of free schools throughout the State.

The deposits in the Salem Saving's Bank have doubled in the last eight years—amounting now to upwards of a million dollars

The Boston Iron Company have closed a contract for 50,000 tons of Nova Scotia Coal, to be delivered this fall and winter.

The Cincinatti Gazette says several depredations have already been committed on the telegraph in Ohio.

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THE OLD HOMESTEAD.

Down in a quiet, sun-lit valley
Stands my low-roofed cottage home,
Rushing thoughts around it rally,
Thither wafted while I roam.

There in Summer, as of olden,
Waves the green-topped manly tree;
There in Autumn sere and golden,
Shadows flit across the lea.

Still the streamlet cleaves the meadow,
Bordered by the mantling vine,
Where. beneath the tall oak's shadow,
Then I threw the hempen line.

Thoughtless childhood! happy childhood!
I would journey back to thee;
Roam again the "tangled wild-wood-wood,"
Sport beneath the maple tree.

There no busy Sorrows fashion
Phantoms in the path of youth,
Nor pale Care nor purple Passion
Taint the bloom of Love and Truth.

Anecdote of D'Alembert.

D'Alembert was the son of a celebrated lady of high rank who to conceal her indiscretion, caused him to be exposed on the steps of the church of St. Roch. Here he was found by a poor woman, who earned her livelihood by her needle She adopted him, maintained him by the produce of her labor, and placed him in the College of Montaign. The young man profited by the instructions received, so that, like Pascal, he made new discoveries in geometry in his fifteenth year. His name soon became known all over Europe and the learned courted the society of the young student of Montaign. Such was the fame he acquired by his early talents, that the lady at last began to be proud of having given birth to such a son. Vanity brought what the voice of nature was incapable of effecting. She one day repaired to the College, and requested to see the youth. He came. "I am your mother," said she. "You my mother, madam? You are mistaken; I have no mother, but her who took care of me in my infancy." He turned his back on her, and never saw her more but continued the affectionate and dutiful son of the seamstress, and repaid with interest in her old age the cares she had bestowed on his childhood.

Sam Patch Outdone.

A fine young heifer a day or two since, says the Rochester Democrat, took the wind out of the sails of Sam Patch, in the way of jumping. She was feeding on the brink of the precipice, over 100 feet high, at the Lower Falls, and by a mistep was precipitated into the water below, which luckily was deep enough to prevent her from being dashed to pieces on the rocks underneath. She disappeared but soon rose to the surface and attempted to gain footing on "terra firma," but could not from the steepness of the bank. Some men procured a boat, and fastening a rope to her horns, towed her some distance down the river to a place where she clambered up the bank as if nothing had happened. The animal did better than Sam Patch, who went down and never came up again.

False Standard of Female Beauty.

We are so accustomed in the present age to behold delicate women, that for want of good models the ideal image which we form of them has been very much changed. Where are the characteristics of beauty as represented in modern novels? Instead of a bright aad healthy complexion, a graceful activity, and youthful vivacity we hear of a slender, aerial form, a sylph like figure, and interesting paleness occasionally relieved by the shade of carnation, an expressive countenance gently tinged with melancholy. But it must be at once perceived that all these characteristics are exactly the indicatives of delicate health; an extremely slender figure, a flitting color, and a languid expression afford no very favorable augury for a future mother or for a wife who may perhaps be called to assist her husband in adversity. Yet the imagination of mothers as well as daughters is so fascinated by such descriptions that they are afraid of destroying these interesting charms; and we meet with some girls who will not eat *for fear of enlarging their feet* Can anything be more pitiable.

Compressed Air Locomotion.

Baron Van Rathen, a German noble, has invented a locomotive, which from experiments made before the College of Engineers at Putney, has given great satisfaction. Air was compressed to nearly 60 atmospheres, or upwards of 850 lbs. the square inch, (equal to about 58 lbs. per square inch of steam.) It is said that this great power of air so accumulated was set free again for motive purposes without any branch of the process being attended with any of that evolution of excessive heat which has hitherto been considered a great obstacle to the employment of compressed air as a motive agent. These experiments come to us somewhat highly colored no doubt, yet we should like to see some little attention given by our engineers to compressed air as a motive power. If an engine can be built to travel twenty miles per hour on the compressed air system, could it not be used on the Erie Canal, building a track on the tow path. The expense would be but small, while the transit of merchandise would be most rapid in comparison with the present mode.

Hollow Shafts.

Forge a pound of iron into a hollow rod and it will support a weight many times greater than if solid. Nature seems to have taken advantage of this, long before the mathematicians had discovered it, as all the bones of animals are hollow. The bones of a bird are large because they must be strong to move their large wings with such velocity; but they must also be light, in order to float easily on the air. Birds, also strikingly illustrate another fact in natural philosophy. If you take a bag, make it air tight and put it under water, it will support a large weight—say a hundred pounds. But twist it or diminish the air in it, and it will support no such weight. Now a bird is just such a bag in air—when he wishes to descend, he compresses it, and falls rapidly; when he would rise, he increases it and floats with ease. He also has the power of forcing air in the hollow parts of the body, and thus to assist his flight.

Indellble Ink.

This article is now extensively used for marking linen. The shopman's price is usually two shillings per bottle; but those who wish to use it can manufacture it much cheaper To two drachms of nitrate of silver, add a weak solution of tincture of galls, (4 drachms,) and mix them thoroughly by shaking. This is an indeliable fluid, and withstands the effects, combined or seperate, of heat and suds. Another recipe is—nitrate of silver, 1 drachm; purest gum arabic, half an ounce, dissolved in half a pint of purest rain water, caught in a perfectly clean vessel, in the open air. To write legibly with this ink, the cloth must first be dipped in a solution of one ounce of salt of tarter, in an ounce and a half of water, and exposed to the sun until perfectly dry, before the ink is applied. Nitrate of silver may be made by putting silver into nitric acid, (aquifortus,) by which it is dissolved.

Vacuums.

If a flexible vessel be emptied of air, its sides will be almost crushed together by the pressure of the surrounding atmosphere. And if the tube partly filled with fluid, be emptied of its air, the fluid will rise to the top. The bee understands this, and when he comes to the cup of the small honeysuckle and finds that he cannot reach the sweet matter at the bottom, he thrusts in his body, shuts up the flower and then exhausts the air, and so possesses himself of the dust and honey of the flower. The feet of flies and lizards are constructed on a similar principle, and thus they walk with ease on glass or on the ceiling.—Their feet are so made as to create a vacuum beneath them, and so they have the pressure of the atmosphere, fifteen pounds to the square inch, to enable them to hold on. The cat has the same power to a less extent.

Time and Thunder.

If we see a thunder-cloud, and wish to know how far it is from us, we must begin to count as soon as we see a flash of lightning, counting deliberately till the report of thunder strikes the ear. Allow four counts to the mile, and we have the distance of the cloud. Thunder clouds travel generally at the rate of 20 or 30 miles an hour.

Immensity of the Universe.

The following is abridged from a report furnished to a Paris Institute by M. Arago. It shows, in a brief space, the wonderful immensity of the Universe:

In the northern hemisphere, 3,400 stars are visible to the naked eye. The number of stars of the 2d magnitude are triple those of the 3d, and so on to the 14th magnitude, which the most powerful instrument renders visible.

The number of stars of the 1st magnitude. is 18, and of the 14th, 29 millions, and if we add to these, the 12th and 13th magnitude, it makes 30 millions of stars. Herschel, in the knee of Orion, a band of 15 degrees long, 2 degrees wide, counted 50,000 stars, and as that band is only the 26th part of the heavens, so the entire surface contains 68,655,000 visible with the telescope, but our glasses only reach the least remote; there must be above 148,-572,200 stars, and our sun is only one of them; the mass of our earth is but the 355th million part of that one sun, and we are but an atom in relation to our earth.

Stars of the 1st magnitude in both hemispheres are 18, the 6th were the least visible to the ancients by the naked eye; in our day it is the 7th.

There are stars whose distance is 800 times greater than those visible to the naked eye.

Light, with the velocity of 77,000 leagues a second, takes three years to reach us from the nearest stars, 900 times more remote, so their light does not reach us until after 2,700 years.

The number of stars visible by means of a telescope of 20 feet focal distance, may be more than 300 millions.

The Widow's Daughter.

One, two, three rings on your finger—four, five—yes, true as we live—there are five gold rings on your finger—and Monday too—the regular washing day. We'll be bound to say you have not been to the wash-tub with your mother to-day. A poor girl as your are, whose mother can hardly earn enough to make both ends meet, and with gold! Shame on you! What could you do, if she would be taken away? Yon are not fit for a wife, and as for being a lady that is out of the question. You have not beauty to reccommend you to some wealthy fop, nor industry to secure an honest mechanic. What in the world are you proud of? Why do you dress so extravagantly?—Everybody knows that your mother is not able to support you in this way, and your neighbors will talk so long as you behave so like a fool.

Our advice is, take every ring from your fingers, and commence an apprenticeship to the trade of housewifery. Learn to sew, to knit, to bake, to wash, to cook. You have nothing to expect from rich relations, and the only chance before you is, that you may become the wife of some honest mechanic.—This chance will slip, if you are not careful, and your chance may be thrown for support upon the town. Believe it, or not, many a foolish and haughty girl like yourself, has come to such an end or a worse one. If our advice is worth any thing, take heed to it, and the next time we call upon you, we shall find you more happy in spirits—cheerful and contented.—*Exchange.*

Loss of a Balloon.

As Mr. Gale, of London, was about to ascend in his balloon from the Glasgow Botanic Gardens, on the first week of this month, a gust of wind suddenly broke his netting, and his balloon arose carrying with it about thirty persons, to the height of 30 feet, from whence they were precipitated to the ground. Fortunately only one was wounded The balloon was destroyed and Mr. Gale lost his all. The inhabitants, however, opened a subscription, Mr. Murray heading it by a liberal sum. The balloon contained 600 square yards of silk, was 40 feet in diameter, 25 feet from valve to valve, and contained when fully inflated, not less than 35,000 cubic feet of gas. The estimated lost was upwards of £900.

Underground Telegraphs.

The Electric Telegraph wires in London, are being put *under ground*—perhaps in pipes. This is what should be done here. Raising the wire on poles is, at best, but a careless mode of securing them. Pass them through the earth.

Maine Ship Building.

The activity of ship-building in the State of Maine, is at this moment very great. In solitary places where a stream or creek large enough to float a ship is found, builders lay the keels of their vessels. It is not necessary that the channel should be wide enough for the vessel to turn round; it is enough if it will contain her lengthwise. They choose a bend in the river from which they can launch her with her head down the stream, and, aided by the tide, float her out to sea, after which she proceeds to Boston or New York, or some other of our large sea ports to do her part in carrying on the commerce of the world.

The ship builders of Maine purchase large tracts of forest in Virginia and other states of the south, for the supply of timber. They obtain their oaks from the Virginia shore, their hard pine from North Carolina: the covering of the deck and the smaller timbers of the large vessels are furnished by Maine. They take to the south cargoes of lime and other products of Maine. and bring back the huge trunks produced in that region. The larger trees on the banks of the navigable rivers of Maine were long ago wrought into the keels of vessels.

Cotton Manufacture in Mexico.

The cotton manufacture in Mexico, is more extensive than is generally supposed, and until checked by the war it was gradually increasing. In the State of Mexico there are twelve factories in operation, with 30,156 spindles. In the State of Peubla twenty-one factories, with 35,672 spindles are in operation, with 12,240 spindles more in construction In the State of Vera Cruz there are seven factories, with 17,863 spindles in operation, and 5,200 in construction. In Gaudalaxara there are five factories, with 11,312 spindles in operation, and 6,500 in the course of construction. In all Mexico there are 53 factories, with 135,280 spindles. The annual consumption of cotton in these factories is 14,586,666 pounds, of which about two thirds is imported. The daily product of cotton yarn is estimated at 35,780 lbs, and valued at 39,358 rials of eight to the dollar.

Prussian Mechanics' Festival.

On the 13th of July, the Philharmonic Society of Prussian Mechanics held their grand festival at Neustadt Eberswalde, in Prussia. There were sixteen societies, composed of about three thousand six hundred members; they arrived, for the most part by railroads, the directors of which had reduced the price of seats one half in their favor, The mechanics entered Neustadt Eberswalde in procession, in holiday clothes, decorated with the distinctive colors of all their cities, and having at their head the banners of their corporations. They were received by the municipality in a body, preceded by the burgomaster, who addressed them with a speech. The first day of the festival, they executed in the open air, with accompaniments of wind instruments, popular airs, two of which were set to music by Mozart. In the evening they met at the banquet, where there was no other drink but beer, the company having themselves excluded from the repast wine and other spirituous liquors. More than ten thousand persons were present at this festival, which was unique of its kind, and which passed off in the most perfect order.

Stockton Co-operative Corn Mill.

A co-operative Corn Mill has gone into operation at Stockton, Eng. Rev. J. C. Meek is a zealous promoter of this work of brotherhood. Experiments of this nature cannot fail to do much good; they teach the people to rely upon their own exertions; to cultivate feelings of mutual affection; to regard their strength as proportionate to their union; they instruct the working classes in the elements of social organization; and are in fact, so many nurseries, where the young trees are nurturned, until they assume a sturdy growth and stately aspect, when putting forth their mighty arms, they defy the wrath of the tempest, and adorn the land from which they draw their sustenance.

The earnings of the halfpenny steamboats which ply between London Bridge and the Adelphi, average $500 a day.

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NEW INVENTIONS.

Threshing Machine.

J. A. Taplin, of Union Village, Washington County, in this State, has invented a threshing machine, takes up but little more room than a wheelbarrow, and with a Horse Power which the inventor has attached to it will thresh out one hundred sheaves in five minutes.

Mr. Taplin, has attached to the Thresher a horse power, of great simplicity and efficiency which is a decided improvement upon the heavy and clumsy ones now in use in that quarter It can be taken to pieces and put up again in twenty minutes, and can be placed any where, without the necessity of an especial erection for it. With two horses, abundant power is obtained to work his threshing machine. We believe that the price is fifty dollars.

New Screw Machine.

Mr. William Van Anden, of Trenton, N. J. who has invented some excellent machinery already for cutting screws, has lately made another improvement, which is said to be superior to any invented in doing better work and in a more rapid manner. The screw is headed and formed before it goes into the machine. A shovel full or more is then thrown into a sort of hopper, and they come out at another part of the machine with the sciew cut and ready for use. There is no transferringof the iron from one place to another, but the thread is perfected and the screw complete when it falls from the machine. The thread is cut with great neatness, and the whole operation is excecding beautiful. The inventor of this curious machine, Mr. Van Anden, is also the inventor of a machine for making rivets, which is to be put in operation by the Delaware Rolling Mill Company as soon as their buildings are completed.

Car Wheel Boxes.

Messrs. Sull & Norris, of Philadelphia, have invented and patented a valuable improvement in the manner of forming the upper bearings of journal boxes of locomotives, cars and carriages of various kinds, and for the shafts of steamboats and other shafts of machinery that is liable to a variation in the range of the journal boxes. The journal boxes are formed cylindrical on the upper or on both the upper and lower sides and combined with plumber blocks so as to allow them and the axles of the respective pairs of wheels when on the railroad to conform freely to the inequalities of rails on both sides of the track.

Improved Rotary Engine.

Mr. W. Gregg, of Philadelphia, has made an improvement in the rotary engine by which he says he governs the admission of the steam and the reversing of the engine's motion in a more simple and convenient manner than by any other plan ever tried before. There is a cam wheel valve slide for two valves, and two shifting inclined planes used for the purpose stated, but the rest of the machinery is not different from that in other rotary engines.

Artificial Teeth Springs.

Mr. G. Stewart, of Philadelphia, has patented a new method for securing springs on artificial teeth, which he calls he dental lever arms spring. The middle a fine wire (gold) is coiled so as to constitute a spring joint and the outer ends of the wire constitute elastic arms of the lever in combination with the cheek-plates and sets of artificial teeth.

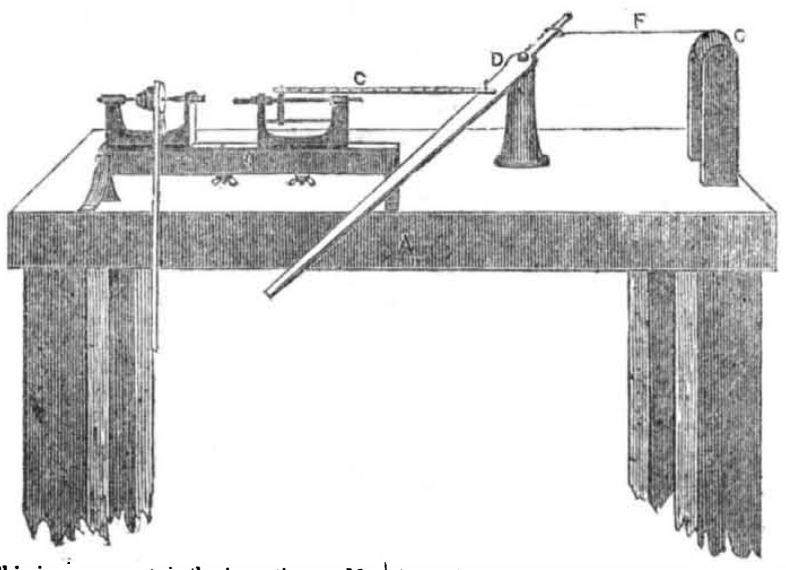
Sawing Machinery.

Mr. J. H. Belter, of this city, has obtained a patent for sawing Arabesque Chair backs, which is considered to be a great improvement for steadying the saw while giving it any required angle to follow the pattern to be cut. It is combined with an adjustable platform.

Nasmyth's Steam Pile Driver.

Mr. James Nasmyth, of Paticroft, England, has taken out a patent in the United States, for his pile driving apparatus. His engine is very simple, and portable. He first drives in a pile as the foundation of his engine, by a temporary attachment to his machine. His steam boiler is made of jointed pipes, so that it is capable of varying easily its position enginwith his moveable engine. One of these machines is in operation at the Brooklyn Navy Yard.

HANLEY'S IMPROVED DRILLING LATHE.



This improvement is the invention or Mr. J. Hanley, harp manufacturer, of this city, and it has been used by him with great advantage for more than two years. No patent has been taken out for it and this is published that it may be of some benefit to those who have much fine drilling either in metal or wood. A, is the Lathe frame, and it is in all respects like those in common use. The peculiarity of the machine is in the using a lever in place of the screw, as in the common *slide*. This lever is fixed on a conical support, or fulcrum, D, and on its short end is a cord, F, which passes over a pulley, G, supporting a weight which exerts a force more or less on the long end of the lever in proportion as the cord is increased or decreased in distance from the fulcrum. C, is a small shackle bar full of holes, so that as the operator stands at his work, he can adjust the lever by pins on the shackle bar in connection with the cylinder, so as to have the lever easily under his control, by moving it with his back, instantly advancing, or drawing out the cylinder from the chuck, using both his hands to manage his work with perfect freedom. By the screw slide, it is well known that one hand has to be constantly on the screw and when the cylinder has to be withdrawn for the purpose of allowing chippings to escape, the screw has to be turned backwards and much time is lost. By this mode the cylinder is pushed back in a moment and brought forward as quick, and when the article to be drilled has to be lubricated with oil, one hand can easily do that while the other still manages the article. In short, for fine work this is a most valuable improvement, as it can also be used in connection with the slide rest, by dispensing with its screw and with or without the weight on the and of the easily by advantage the shackle bar C, to the slide. In fair operation the lever used as described, will enable the operator to accomplish abont double the quantity of work, and will do it better than with the screw. We can recommend it as being of great advantage, and the inventor has only the desire of benefitting the mechanic, who can easily put up this improvement with but little expense, and who will not after having done so and used it for a little time, part with it as the inventor says, for any consideration.—The model can be seen any time at our office.

The Loading Rake.

A gentleman in Philadelphia has recently obtained a patent for a new agricultural implement called a Loading Rake. It consists of one or two rakes, similar to the common horse rake, attached to the wagon, which are raised by the onward movement of the team, and deposits their contents in the wagon. By this process, as the hay is taken from the swathe, the labor of eight men is readily performed by two men and a boy, in three-fourths of the ordinary time. With the force above stated, three-quarters of an acre can be taken up on a fair average, every half hour. The rake can be adjusted, with some slight alterations, to the ordinary hay wagon, and can be detached at pleasure.

Such is the account of a Loading Rake, taken from one of our exchanges, and we cannot but think that there must be some mistake about it, as it is morally impossible for any team to take up hay from three quarters of an acre in that time, if it is any kind of crop at all, and for all that has been said about making hay in the swathe, we are convinced that the best way is to spread it out after all. If hay could be dried in the shade, it would be of five times more value than dried in the sun

Tennon Cutting Machine.

Mr. Wm. MacCirne, of Senecaville, Ohio, has invented a new way of cutting round tenons on spokes of carriage wheels. The apparatus is said to be different from all others constructed for the same purpose heretofore. It is appended to the end of the spoke during the action of cutting.

Couplings for Cars.

Mr. William Bussey, of Rockgrove, Illinois, has invented an improvement whereby the coupling and uncoupling of railroad cars is done in a very speedy and simple manner, by the peculiar arrangement of an eccentric tumbler and revolving roller

Condensed Air Engine.

A. Parsey, of England, has taken out a patent in the United States for his condensed air engine. The principal part of his invention is a spring piston to regulate the elastic force of the air as it passes from the receiver to the cylinder.

Design of Oil Cloth Patterns.

Mr. James Albro, of Elizabethtown, N. J., has taken out a patent for a new design or figure to be printed on oil cloth. Of course the size and colors of the design are not the specific parts of it, but the pattern and combination of different forms.

English Patents.

The Improved Air-Blast and Locomotive Machine.

Mr. Kite has taken out letters patent for a novel mode of rendering the current of air which passes a locomotive in its rapid flight subservient to a blast for supporting the fire, and thus saving the amount of power necessary for the blast. He places a series of deflecting plates on the sides of the ash box—so that, when the engine is in motion, the air impinges upon the plates, and passes through openings between them towards the fire-bars and the furnance. The ash box is divided into three longitudanal chambers, which are intended to prevent any injurious effect which might result from the introduction of an opposing current of air when the wind happens to be in a line not parallel with the line of motion of the locomotive. A second series of deflecting plates are inserted into the front of the smoke-box, and led into a chamber terminating in an annular opening which surrounds the exhaust pipe. The atmospheric air with which the deflecting plates are brought in contact is, in a great measure, by the action of those surfaces, propelled up the chimney, with more or less force, according to the velocity at the time, and to the direction in which the wind is blowing. The exhaust pipe is made of sufficient size to allow of a free exhaust of steam from the cylinders, without producing what is termed back action on the piston. Should, however, the driver have, on an emergency, to revert to the ordinary mode of obtaining a blast by the contraction of the blast-pipe, he has only, by means of a lever handle, to bring down a valve, which will shut off the air from entering the openings between the deflectors, and drop over the mouth of the exhaust pipe a nozzle which will contract the opening for the escape of the exhaust steam, and put the blast in the same condition as now generally used. When the locomotive is in motion, or the wind is blowing upon the chimney, either in back, front, or sides, a partial vacuum is produced inside, and a corresponding action produced upon the fire, from the rush ot air through it, to supply the void in the chimney. In some cases, instead of leaving open the top of the chimney, it is proposed to close it up, and leave one or more smaller passages for the escape of the waste steam; or it may be allowed to escape from a pipe placed outside the chimney, in which there will be no occasien for the smaller passages.

Improvements in Iron Manufacture and Coating.

Messrs. Morewood and Rogers have taken out patents in England, for several new processes connected with the coating of iron with unoxidisable metals; and also for a machine for corrugating sheet iron for roofs, &c. The latter consists in a fixed bed, moulded on the upper surface to the form required for the sheet iron; and another mould, the face of which exactly fits the lower one, works in a strong frame on cranks and axle, set in motion by any proper machinery. The former improvements, with respect to coating metals, consist first in the use of a certain alloy of tin and zinc, so as to obtain the production of zinc, combined with the advantages of tin as a covering—at the same time to obtain a harder coating than could possibly result from the use of either of these metals alone. Fifty parts of zinc, and fifty parts of tin, are the proportions of the metals employed; and as the tin is diminished in quantity, the adherence of the coating becomes less effectual. Secondly, the coating iron with molten zinc, and using the products of zinc, formed by precipitation ot that metal in the bottom of the bath; such products have been heretofore waste, and require great heat to melt them, employing chloride of manganese as a flux. Another description is 50 parts of zinc, 34 of lead and 16 of antimony, well stirred together—the lead and zinc should be melted to a red heat before supplying the antimony. Thirdly, for subjecting sheets of coated metal, revolving in a flux, kept constantly to a rather lower degree than the melting point of the coating metal, by which means the coating will be rendered soft, and is acted on by the pressure;—and fourthly, for the employment of certain means of coating iron, to be acted on by muriatic acid, and to prevent, or dissolve, oxide confined above the metal bath, excluding all communication with the atmosphere as much as possible.

Mortice Machine.

A Mr. Jones, of Goswell street, London, patented a mortice machine last March, and so successful has it been for correctness, freedom and rapidity, that in the space of a few months his orders have so increased to such an extent among the carpenters in the city and distant towns, that it has become almost impossible to fill them.

The Smoke Nuisanee.

The Pittsburghers are making very laudable efforts to get clear of the smoke raised from the numerous stone coal fires, and which so much mar the beauty of their city.

We notice in a late number of the *Gazette*, an offer "in addition to the $100 offered 'for the best method of consuming smoke in ordinary household stoves and cooking apparatus,' gold medals of fifty dollars each to such persons as shall, within three months, present the most satisfactorily results in their application of a smoke preventative, or smoke consuming apparatus, in a furnace or factory, and on a steamboat."

First Ocean Steam Engine.

The New Jersey papers state that Daniel Dod, father of the late Professor at Princeton, built the engines which propelled the first steamboat across the Atlantic from Savannah. They were fitted up at Elizabethtown Point.

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NEW YORK, SEPTEMBER 4, 1847.

American Genius and Enterprise.

Considering the short period of our existence as an independent nation, history furnishes no examples by which we can compare ourselves, either as it regards an increase in wealth, power, population, or influence.—Seventy years ago we appeared before the world as a feeble, though spirited colony of Britons. Now we have a population equal to England and Scotland combined. We have an empire extending from Cape Florida on the south to the St. Lawrence on the north. We hold the keys of the Atlantic on the east and the Pacific on the far distant west. Our navies sweep the Gulf of Mexico and our armies occupy the land of the ancient Aztecs and their conquerors of ancient Celtiberia. Every American must feel a glow of enthusiasm swelling his heart as he thinks of his country's greatness, her might and her power. Much as we may admire and rejoice in our national power, we must acknowledge that her name and her fame as a good and scientific nation, inspires us with most pride. Power may gain us the reverence of fear, but virtue and learning will gain us the reverence of true respect and affectionate admiration. Our nation re-echoes the peals of victory that come thundering down from the peaks and gorges of the Cordilleras, and the flags of the vanquished float in mournful grandeur beneath the star spangled banner, or are trod beneath the hoofs of our charging coursers. While our whole nation rejoices at the triumph of our courage and military genius, we must confess that we turn our eyes with a fonder look to another field and our heart responds with deeper enthusiasm to other sounds than those of the battle cry. The triumph of American Art, the triumph of American skill and mechanical genius thrill our heart with the deepest emotions. We glory that West was President of the Royal Society of Painters, and that Franklin and Rittenhouse, and many others, members of the Royal Society in London, as well as almost all of the similar societies in Europe, and at the present moment the fame of a Powers in sculpture fills not only the imperial city of Rome, but the wide world. His statue of the Greek Slave, is here—it is a spiritual marble—most exquisite in form, grace, ease and expression. The lovely slave has the shackles on her lovely arms—and well has the sculptor touched them off to adorn the captive and inspire pity for her fate. You behold her and go back to the days of old and think that you see a daughter of Pythagoras torn from the arms of her aged father in all the purity of youthful innocence and weeping affection. This is a triumph of American Art of which we may well be proud.

If we now turn our eyes to the North of Europe, we behold still greater triumphs of American genius and enterprise There, in the heart of the Russian Empire—the most mighty of earth's despotic dominions, we behold a few American mechanics engaged in undertakings which will, in our opinion, exert an influence upon the future destinies of the North of Europe and Asia, portentous with glorious results. Under the superintendence of Major Whistler, there are now about 30,000 Russians, building railroads, and under the superintendence of Messrs. Harrison, Winans and Eastwick there are about 2000 occupied in building machinery. Two hundred locomotives, 5000 trucks and 70 passenger cars are to be completed by 1849, and then across the Steppes of the Volga and through the Passes of the Ural mountains, will yet roll the swift American locomotive, pealing notes of nobler victories than those of the reddest warfare—the triumphs of American mechanical genius. Who knows now what great and good influence in the cause of Freedom and Reform is exercised by the mingling of our mechanics with the peasantry of the Russian empire.—Who knows but in a few years the now Russian serf, may stand a freeman at his own cottage door, and as he beholds the locomotive fleeting past, will take off his cap, keel and bless God that the Mechanics of Washington's land were permitted to scatter the seeds of social freedom in benighted Russia.

The Press is the voice of freedom—the Railroad its highway of travel, then, to improvements in physical science and to the triumphs of American mechanical genius in opening up the great pathway of Russian communication, may we not justly and fondly anticipate a happier day for the social condition of the peasantry in Europe and Asia.

The Hammer.

The Hammer is the universal emblem of Mechanics. With it are alike forged the sword of contention and the ploughshare of peaceful agriculture, the press of the free and the shackle of the slave. The eloquence of the forum has moved the armies of Greece and Rome to a thousand battle fields, but the eloquence of the hammer has covered those fields with victory or defeat. The inspiration of song has kindled up high hopes and noble aspirations in the bosoms of brave knights and gentle dames, but the inspiration of the hammer has strewn the field with tattered helm and shield, decided not only the fate of chivalric combat, but the fate of thrones, crowns and kingdoms. The forging of a thunderbolt was ascribed by the Greeks as the highest act of Jove's omnipotence, and their mythology beautifully ascribes to one of their gods the task of presiding at the labors of the forge. In ancient warfare, the hammer was a powerful weapon, independent of the blade which it formed. Many a stout skull was broken through the cap and helm by a blow of Vulcan's weapon. The armies of the Crescent would have subdued Europe to the sway of Mahomet, but on the plains of France their progress was arrested, and the brave and simple warrior who saved Christendom from the sway of the Mussulman was named Martel—"the hammer,"—how simple, how appropriate, how grand, "the hammer." The hammer, the saviour and bulwark of Christendom. The hammer is the wealth of nations. By it are forged the ponderous engine and the tiny needle. It is an instrument of the savage and the civilized.—Its merry clink points out the abodes of industry—it is a domestic deity presiding over the grandeur of the most wealthy and ambitious as well as the most humble and impoverished. Not a stick is shaped, not a house is raised, a ship floats, or carriage rolls, a wheel spins, an engines moves, a press speaks, a viol sings, a spade delves, or a flag waves, without the hammer. Without the hammer civilization would be unknown and the human species only as defenceless brutes, but in skilful hands directed by wisdom, it is an instrument of power, of greatness and true glory.

Lightning Speed.

The Washington Union of Aug. 23 says:—The administration, having occasion for the services of one of its most dinguished officers, who was then in New York or in Philadelphia, sent him a Telegraphic Message on Friday at 3 o'clock, to both cities. He had, however left New York at 5 o'clock on Friday evening, without receiving the message; but at 9 o'clock on that night he received the one sent to him at Philadelphia, and arrived in this city the next morning at 8 o'clock. Thus a message may pass from Washington to Philadelphia at 9 o'clock in the night, and in eleven hours the message reaches Philadelphia and the officer returns to Washington. This is one of the prodigies of the age arising from the immense improvement of art in the applications of the principles of science.

Water Witch Steamer.

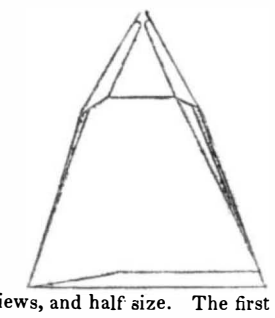
This vessel which was fitted with Hunter and Loper's propellers, has lately had them taken out and a common cross head engine put in, working downwards, it is said at an angle of 54 degrees. The entire engine is below the shafts—six feet stroke—cylinder 37½ inches diameter—side wheels—air pump about an angle of 54 degrees—two feet stroke She makes easily eleven knots an hour, which is considered remarkably well. Her engine is of seventy five horse power. The mechanics at the Navy Yard, Washington, appear to be proud of her

Mechanical Manipulations.

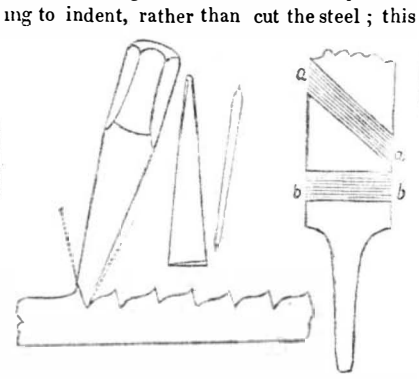
The pieces of steel, or the blanks intended for files, are forged out of bars of steel, that have been either tilted or rolled as nearly as possible to the sections required, so as to leave but little to be done at the forge; the blanks are afterwards annealed with great caution, so that in neither or the processes the temperature known as the blood-red heat may be exceeded The surfaces of the blanks in now rendered accurate in form and quite clear in surface, either by filing or grinding. Where the majority of the files manufactured are small, the blanks are mostly filed into shape as the more exact method; and where the greater number are large, the blanks are most commonly ground on large grindstones as the more expeditious method. The blank before being cut is slightly greased, that the chisel may slip freely over it, as will be explained.

The file cutter, when at work, is always seated before a square stake or anvil, and he places the blank straight before him, with the tang towards his person, the ends of the blank are fixed down by two leather straps or loops, one of which is held fast by each foot.

The largest and smallest chisels commonly used in cutting files are here represented in



two views, and half size. The first is a chisel for large rough Sheffield files, the length is about 3 inches, the width 2½ inches, and the angle of the edge about 50 degrees, the edge is perfectly straight, but the one bevil is a little more inclined than the other, and the keenness of the edge is rounded off, the object being to indent, rather than cut the steel; this



chisel requires a hammer of about 7 or 8 lbs. weight. The smaller one is the chisel used for small superfine files, its length is 2 inches, width ½ an inch, it is very thin and sharpened at about the angle of 35 degrees, the edge is also rounded, but in a smaller degree; it is used with a hammer weighing only one to two ounces, as it it will be seen the weight of the blow mainly determines the distance between the teeth. Other chisels are made of the intermediate proportions, but the width of the edge always exceeds the width of the edge to be cut.

The first cut is made at the point of the file, the chisel is held in the left hand, at an horizontal angle of about 55 degrees, with the central line of the file, as at A A, and with a vertical inclination of about 12 to 4 degrees from the perpendicular, supposing the tang of the file to be on the left-hand side. The blow of the hammer upon the chisel causes the latter to indent and slightly to drive forward the steel, thereby throwing up a trifling ridge or *burr*, the chisel is immediately replaced on the blank, and slid from the operator, until it encounters the ridge previously thrown up, which arrests the chisel or prevents it from slipping further back, and thereby determines the succeeding position of the chisel. The heavier the blow, the greater the ridge, and and the greater the distance from the preceding cut, at which the chisel is arrested. The chisel having been placed in its second position, is again struck with the hammer, which is made to give the blows as nearly as possible of uniform strength, and the process is repeated with considerable rapidity and regularity, 60 to 80 cuts being made in one minute, until the entire length of the file has been cut with inclined, parallel, and equi-distant ridges which are collectively denominated the *first course*. So far as this one face is concerned, the file if intended to be single-cut would be then ready for hardening, and when greatly enlarged its section would be somewhat as in the diagram annexed.

Most files, hower, are double-cut, or have two series or *courses* of chisel-cuts, and for these the surface of the file is now smoothed by passing a smooth file once or twice along the face of the teeth, to remove only so much of the roughness as would obstruct the chisel from sliding along the face in receiving its successive positions, and the file is again greased.

The second course of teeth is now cut, the chisel being inclined vertically as before or at about 12 degrees, but horizontally, only a few degrees in the opposite direction, or about 5 to 10 degrees from the rectangle, as at B B · the blows are now given a little less strongly, so as barely to penetrate to the bottom of the first cuts, and from the blows being lighter they throw up small burs, consequently the second course of cuts is somewhat finer than the first. The two series of courses, fill the surface of the file with teeth which are inclined towards the point of the file, and that when highly magnified much resemble in character the points of cutting tools generally, for the burrs which are thrown up and constitute the tops of the teeth, are slightly inclined above the general outline of the file, minute parts of the original surface of which still remain nearly in their first positions.

If the file is flat and to be cut on two faces it is now turned over, but to protect the teeth from the hard face of the anvil, a thin plate of pewter is interposed. Triangular and other files require blocks of lead having grooves of the appropriate sections to support the blanks, so that the surface to be cut may be placed horizontally. Taper files require the teeth to be someweat finer towards the point, to avoid the risk of the blank being weakened or broken in the act of its being cut, which might occur if as much force was used in cutting the teeth at the point of the file, as in those at its central and stronger part.

Good Wages.

The "blowers," or head-workmen in the German Sheet Glass Works in Lancaster England, receive wages varying from four to seven pounds sterling per week, exclusive of overwork, and in adition a furnished house rent free, and a free passage from and to the continent at the beginning and end of their term of contract. About two thousand persons find employment in this peculiar branch of the Glass business.

Changes in the Course of Trade.

Among the articles received from the South by Canal at Toledo, Ohio, during the month of August, for shipment to the North and West were 29,236 lbs. Sugar, 7,152 sacks Hemp, 33,-907 lbs Cotton, 197,097 Leaf Tobacco, and 16,-445 manufactured do. The receips of Cotton are constantly increasing—the manufacturers of New York having ordered their supplies from the West. The cost of transportation is said to be from 50 to 75 per cent. cheaper.

To New Subscribers.

Those subscribing to the Scientific American will be furnished, if desired, with all the back numbers of the present volume. Bound together at the end of the year, they will form a handsome and valuable work.

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New Property of Light in the Action of Chrysammate of Potash upon Common and Polarized Light.

The chrysammate of potash, which crystallizes in very small, flat rhombic plates, has the metallic lustre of gold, whence it derives its name of golden fluid. When the sun's light is transmitted through the rhombic plates, it has a reddish yellow color, and is wholly polarized in one plane. When the crystals are pressed with the blade of a knife on a piece of glass, they can be spread out like an amalgam. The light transmitted through the thinest films thus produced, consists of two oppositely polarized pencils—the one of a bright carmine red and the other of a pale yellow color. With thicker films, the two pencils approach to two equally bright carmine red pencils. It is to the reflected light, however, and its new properties, that we wish to direct attention. Common light, reflected at a perpendicular incidence from the surface of the crystals, or of the films, has the color of virgin gold. It grows less and less yellow as the incidence increases, till it becomes of a pale bluish white color at every incidence. The compound pencil, thus reflected and colored, consists of two oppositely polarized pencils—one polarized in the plane or reflection, and a pale bluish white color at all incidences, and the other polarized perpendicular to the plane of reflection, and of a golden yellow color at small incidences, passing successively into a deeper yellow, greenish yellow, green, greenish blue, blue, and light pink, as the angle of incidence increases. This very remarkable property, which Sir David Brewster, discovered also in some other crystals, is not caused by any film of oxide formed upon the natural surface of the crystal, nor is it the result of any change produced upon the surface by external causes. It is exhibited, under the usual modifications, if the surface of the chrysammate is in optical contact with fluids and with glass: and when the crystal is in the act of being dissolved, or when a fresh surface is exposed by mechanical means, the superficial action of the crystal upon light is in both cases the same. When the chrysammate is re-crystallized from an aqueous solution, it appears in tufts or prisms of a bright red color, the golden reflection being overpowered by the transmitted light; but when these tufts are spread into a film by pressure, the golden yellow color re-appears. When the crystals of chrysammate are heated with a spirit lamp, or above a gas burner, they *explode* with a flame and smoke like gunpowder; and, by continuing the heat, the residue melts and a cross of colorless amorphous crystals is left. The same explosive property is found in the aloetinate of potash.

Mr. Schunck (of Rochdale) Eng. is the discoverer of the chrysammatic acid. It is formed by the action of boiling nitric acid upon aloes, and is one of the last products of that action. The chrysammate of potash is a beautiful and curious salt; and although so plastic as to be readily moulded into thin plates, is yet so sparingly soluble as to require above 1,500, times its weight of water to dissolve it.

Electric Velocity.

It has been stated, and generally understood, that electricity in high tension travels at the rate of *two hundred and eight thousand* miles in a second of time—that this is the probable velocity of communications by the magnetic telegraph. But from recent observations it appears most probable that no space or time whatever is required in the passage of the telegraph current from one station to another, whatever the distance. The induction of the fluid at one end of the wire produces eduction at the other at the same instant.

Pitcairn's Island.

This remarkable island was visited on the 26th of February by the British Government brig Spy. The officers went ashore and were received by George Adams, son of the colony. They met with a cordial welcome, and after partaking of a repast in Adam's old cottage, the party returned on board the Spy. Forty-six whalers, mostly American, had called during the year 1846. It will be remembered that this Island (in the South Pacific Ocean) was settled about half a century ago by several Englishmen, mutineers of an English ship who took with them Otaheitan women.

Virginia Wheat Fields.

A writer in the *National Standard* says: "We called upon the late President, Mr. Tyler, residing on the north side of the James River, about thirty miles below Richmond. To say he is a good cultivator would be small praise. He informs us that when he moved ed on his farm, three years since, a field of wheat of two hundred acres, which he showed us, would not produce more than the seed, but is now waving with a crop of twenty bushels to the acre. The dressing he applied to his land was shell marl, together with straw and other manure made on the farm. It abounds in sufficient quantities to last for many years. Ten or fifteen miles above the ex-President's, on the same side of the river, is the family seat of the lamented Harison, also in a high state of cultivation, and perhaps one of the most eligible situations on the James River. From Mr. Tyler's we proceed to the estate of Robert B. Bolling, Esq., at a distance of ten miles. We there found farming conducted on a gigantic scale, such as had not entered our imagination. He went with us through his field of wheat, which contained *nine hundred acres!* The prospect for a crop was very fine, and we supposed he would have thirty bushels to the acre. He next showed us his grass field, which contained one thousand acres. Owing to the drought, it was not as good as expected, but we thought as good as any of ours. His corn, which looked well though small, in consequence of the cold, amounted to near seven hundred acres. The oats, owing to the draught, were backward. The number of acres in oats, I think he said was three hundred. His entire plantation contained *seven thousand acres of land!* The timber, consisting of white and black oak and pine, is very large except the second growth. He uses lime from the North River, which costs him six cents per bushel, together with straw, which he spreads over his land in the fall and winter—ploughs under and then dresses with lime. This mode has brought his land to a high state of cultivation. His land, a few years back, was very poor."

The Mint at Philadelphia.

The machinery in the Mint is very beautiful. The engines are constructed in the very highest sense of mechanical perfection. Symmetry, power and the harmony of the parts, are all displayed in beholding their rapid motion and the silence with which the work is performed. Milling in the Mint is an interesting process. A man takes a basket full of what appears to be the heads of copper nails, and proceeds to pile them flatwise into a brass candlestick setting closely against a steel mill stone that goes swiftly and noiselessly round, catching every single nail head from the brass candlestick, and turning it out in the shape of a pearl edged dead gold button. These are given to the die, where, oddly enough, they are first authorised to live. Here being popped into another candlestick, which hold them each a quarter of a second under the foot of a steel-headed lever, which keeps stamping away as if beating time to a perpetual soldier's hornpipe. The last process is the miracle, transforming the dead and dingy button mole into a golden, glowing, bright-faced personality dear to every beholder's hopes and memories.

The best form for Compactness.

The forms of cylinders leave large spaces between them. Mathematicians labored a long time to find out what figure could be used to lose no space; and at last found that it was a six sided figure—also that three planes ending in a point, form the strongest roof or floor.—The honey bee discovered the same things a good while ago. Honey comb is made upon six sided figures, and the roof built with three planed surfaces coming together.

Physical Endurance.

Mr. Kendall says, that the northern troops endure the climate of Mexico better than the southern. Seger, in his history of the expedition to Russia, states that the Italian troops and those from the South of France endured the horrors of the retreat better than the more northern men.

The Atmosphere.

The atmosphere in which we live is an elastic fluid. A portion of it can be compressed so that it shall not occupy a twentieth or a fourtieth part of a space it naturally fills, and yet, on the removal of the pressure by which this condensation has been effected, the air will expand to its original volume. There is a continual tendency in condensed air to do this and the expansive power or force with which the air endeavors to regain the space it previously occupied, will of course depend upon the degree to which it is condensed. This is the case with all elastic bodies It we employ a slight force to bend a piece of steel watch-spring, it will have a recoil equal to the power employed in bending it. If we employ a greater force, the result will be the same; and this holds true, not of a watch-spring alone, but of all elastic bodies, and amongst the rest, of the air. It is in order to make available this property of the atmosphere that the air-gun is constructed

Color of the Atmosphere.

The atmosphere immediately incumbent upon the earth, has the power of absorbing and retaining more of the blue rays of light than that at greater altitudes, and thus when we cast our eyes on high, we look through a volume of the densest air replete with blue light; and so likewise if we look abroad over an extensive tract of country, the horizon of which is formed by distant hills, they appear blue, or in other words, they partake of the color and medium through which they are viewed. If we journey to them, the blue color gradually vanishes, and at length their ordinary colors appear; and now, looking from the hills towards the spot from whence we journeyed, it in turn appears blue. The ridge called the 'Blue Mountains,' Australia, another of the same name in America, and many others elsewhere, are not really blue, for they possess all the diversity of scenery which their climates can give; but to the eye when first discovered, they all at first appear blue, and they have retained the name.

North American Antiquities.

A valuable gift has been presented to the Antiquarian Society of Copenhagen, by Charles Hammond, Esq., in Boston, containing an earthern vase with two handles, fourteen inches high, at the mouth four and at the base five inches in diameter. It was found among the rubbish in the substructions of a house in Nahant, Mass., with two small fragments of ornamented earthen vases used by the Indians. The ornaments were cut and impressed in the wet and yielding lime, and resemble very much the sepulchral vases of the Scandinavians from the heathen times. They were found on the Island of Martha's Vineyard; a top-stone (steendop) of an oval shape, with a furrow at the one end, which was found near Middleborough; a triangular and perforated stone, one inch and three quarters, long, of a green-yellowish color, and a small boat anchor, 9 inches in length, with a furrow cut on one side, likewise found at Middleborough; then two small stone wedges, eight rough spear-points and arrow-heads, which appear to be a mere preparatory work. an arrow-head with an incision below in order to fasten the shaft. Three triangular arrow-heads of white quartz, in the shape of the heart; and another like a lancet. From Dr. James Porter, in Plainfield, in Massachusetts, the Museum received four arrow-heads of quartz; the one of which is in the form of a heart, and the other in that of a lancet; all found in assachusetts. Dr. Swift, in Easton, Pennsylvania, presented a round stone, which had been flatened, and which he supposes to have served for a rough hewing stone, adding that he himself has, from different fragments, formed arrow-heads with it, in order to convince himself of its being adapted to that use. This, then, is exactly the same opinion which Professor Nilsson, in Sweden, expressed a long while ago about the same kind of flattened or rounded stones, so often found in Scandinavia; yet Dr. Swift was not acquainted with the opinion of the Swedish Professor.

Formation of character often depends on circumstances apparently the most trivial.

Great Locomotives.

Mr. Ross Winans, of Baltimore, has lately built two engines, of which the Charleston Courier gives the following graphic description:—

"Two of the most splendid pieces of mechanism we have ever seen, are the locomotives 'John C. Calhoun,' and 'Rough and Ready,' lately received here. The Calhoun is certainly a splendid engine, of great power, exquisite workmanship and perfect construction. She bids fair, like her illustrious namesake, to take the lead on our road, and to command the admiration of all by her fidelity in 'keeping the track,' and bearing her train of followers safely through. When we saw her she was in that state ycelpt 'masterly inactivity,' but when her steam's up she'll be some punkins and no mistake. The Rough and Ready is not so polished a craft, and yet is no less wonderful a piece of machinery. Its beauty consists in simplicity, the total absence of ornament; doubtless constructed on the principle that 'beauty unadorned 's adorned the most.' The former engine is the court beauty—arrayed in splendor, glistening up with jewels, proud and magnificent; the latter, the village maiden, unadorned and yet surpassing fair. The former brings to mind the illustrious statesman, in the purple and splendor of the Senate; the latter, the indomitable hero in his farmer dress, plain, yet invincible on the battle field."

Flax and Flaxseed.

It is said that Preble County, Ohio, is the greatest flax growing county in the Union.—This year the crop exceeds any previous one in the quantity sown, and the yield of seed will be about an average. It is computed that 100,000 bushels of seed will be raised; of this quantity one tenth will be required for home consumption, leaving 90,000 bushels for market. This, at the price at which seed now rates, 55 cents per bushel, will bring into the county the neat sum of $47,500. The flax crop, if some means could be devised for preparing the lint, would be very profitable. Lint just as it comes from the brake, is worth $15 per ton.

If as much mechanical genius had been expended in the preparation of flax as there has been on cotton, linen might be nearly as cheap as cotton cloth. We have lately seen a plan of a machine invented by a young man, for cleaning and hatchelling flax. It is good, but his means disqualify him from manufacturing his machine.

Oregon.

The Oregonians are determined to have a steam tow boat, so that vessels may be brought up the Columbia River with safety. The wind blows down the river five months of the year, and vessels are said to be two months in sailing up 100 miles, whilst the difficulty could be easily overcome by steam, and a large trade opened with the Pacific. A memorial to Congress states that Oregon can already furnish, at short notice, five thousand barrels of flour for the use of our Pacific squadron, three thousand barrels of beef, and two thousand of pork. Lumber, tar, pitch, flax and hemp can be hereafter supplied, if a demand should be created for them. The Oregon treaty, by which the boundary was settled with Great Britain, seems not to be very popular with the American emigrants. The appropriations for the year made by the local legislature is $5,000, which increases the territorial debt to $10,000.

Foot Prints on the Grass.

Towards the end of fall may be often observed in the field, marks of footsteps, which appear to have scorched the grass like heated iron: a phenomenon formerly regarded with superstitious dread, but can now be explained upon very simple chemical principles. When the grass becomes crisp by frost, it is exceedingly brittle, and the foot of a man or even a child, is sufficiently heavy to break it completely down, and effectually kill it, therefore, when the sun has thawed the frosty rime from the fields, these foot-tracks appear brown and bare in the midst of the surrounding green grass.

"Where is your father?" said an angry master to the son of his tippling domestic. "He is down stairs, sir," replied the boy "Getting drunk, I suppose?" "No sir, he aint." "What then?" "Getting sober, sir."

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TO CORRESPONDENTS.

" W. T. J. of ——."—Your article has been received, and will meet with its merited consideration next week.

L. V. W. of Ohio,"—We have heard that there is a machine for pegging boots by steam or water power, in Woburn, Mass.

E. G. of N. Y."—Your plan for splitting leather seems to be the very thing desired.—There can be no doubt but the knife spinning on an axis, will require less power and do work better than by drawing the leather square on the knife. This principle is well understood by all mechanics engaged in turning, or any other branch of mechanical manipulation. It will, however, require a very correct frame to keep the leather true to the knife. Your plan of a roller for that purpose is the best that could be adopted.

" J. W. of Conn."—We have seen no plan as a substitute for the paddle wheel in steamboat, at least for ocean navigation. The screw appears to be the best yet experimented upon, but even that, as far as tested, has proved to be inferior.

" L. V. of Pa."—The nitrate of iron is simply iron thrown into nitric acid. The contact of the iron with the acid is soon shewn by dense volumes of red smoke rising from the acid which boils and fumes in a most extraordinary manner until all its nitrogen is expelled. The nitrate of iron is used for dyeing or staining woods black. Also for dyeing as a basis, the beautiful Prussian blue on silk It is also used to dye the royal blue on cotton by a mixture of the salts of tin along with the iron. The tin makes the color more fast than to have the iron merely as a mordaunt.

" R. M. of N. Y."—There can be no doubt but that many engines work with a power almost double to the common measurement.—We have been informed of one little engine of 4 horse power, performing as much labor as some made for eight horse powers. Many forget that the power is in the steam. The qualities of the boiler and the condenser—the power of the vacuum—are grand points. The great improvement which appears to us, yet to be made, is using the steam with all its expansive power, as the steam is cut off at a point when it can exercise the greatest power.—Those who think, however, that a steam engine can be worked at no expense, are surely not very reflective, or correct in their judgment.

" J. J. of N. Y."—We sincerely appreciate your good opinion of the style and character of the Scientific American. We have always considered that a chaste and elegant literary style was necessary to give dignity to a scientific paper, as well as a wide spread intimacy with the progress of physical science and an intimate knowledge of first principles.

" J. R. of Mass."—We shall at some future period, present a number of practical statistics relative to the economical difference between steam and water powers.

" W. J of Mass."—It is penal to affix the word patent, or the stamp mark or device of any patentee on any unpatented article. The penalty is $100.

" S. W. D. of N. Y."—We shall answer you by mail in the course of a week, in reference to your hydraulic elastic motion,

" M. R. of Vt."—The use of salt in your preparation for dyeing black, is erroneous; it is of no use whatever, and the peachwood is an entire loss. Prepare your common blacks with the sulphate of iron and the sulphate of copper, one part of the latter to three of the former, and after having boiled your goods one hour, take them out, air them, wash them and then give the logwood. If you use the fustic along with the logwood, the goods will be easier cleaned. The exclusive use of the sulphate of copper gives but a fugitive color—it looks well for a short period and then becomes grey.

G. V. of N. J."—We have answered your letter by mail, and have sent the desired information.

" J. H. C. of Pa."—You can have the back numbers of the Scientific American.

Mechanics Mutual Protection.

The New York Mechanics Literary Club has organized propitiously. The members have exhibited a spirit that is yet destined to exert an influence for the good of the mechanic, especially those who are, and may become, connected with it. Its title bespeaks its character. Essays, Recitations, Debates, and friendly philosophic conversations are to be the exercises, from which no member can be exempted. The officers elected are:—R. Macfarlane, President; James Gannon, Vice do; W. Murray, R. Sec.; Jas. McDonald Cor. Sec.; S. Maxwell, Treasurer; Horatio N. Warren, Librarian; Henry Hagar, Herald.

On Thursday evening last, with J. S. Huyler, D. G. P, and a number of members from various Mechanics Protections of New York, we visited Jersey City Protection No. 1, and were gratified to see the zeal and interest taken in the welfare of the mechanic by the noble hearted men who met to be initiated into the cords of our unity. The following persons were elected and installed officers: John Miller, S. P.. M. B. Hart, J. P.; M. Honeyman, R. S.; T Brainard, F. S.; J. Cooley, T. We venture to predict that a united perserverance in the members of Jersey No. 1. will soon spread the cause in that State.

R. Macfarlane, P. G. S

New York.

Vol. 1 Scientific American.

A few sets of 25 Nos. each of Vol. 1, Scientific American, can be had at this office, price 50 cents. The complete sets of the last half of Vol. 1. have all been disposed of at the subscription price, and the numbers advertised above are not consecutive, but in fine order

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☞ This paper circulates in every State in the Union, and is seen principally by mechanics and manufacturers. Hence it may be considered the best medium of advertising, for those who import or manufacture machinery, mechanics tools, or such wares and materials as are generally used by those classes. The few advertisements in this paper are regarded with much more attention than those in closely printed dailies.

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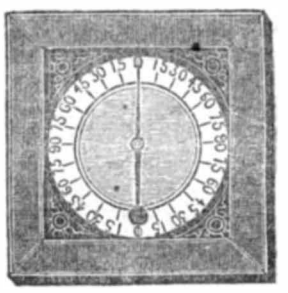
Plumb and Level Indicator.



THE UTILITY of this invention so far exceeds the expectation of the inventor that he has been induced to engage in the manufacture of them to a large extent. It is understood from the engraving, that the proper position of the instrument is vertical, and that the weight of the ball will keep the index in a perpendicular position, so that either the bottom or side of the frame being placed against a horizontal, vertical or oblique surface, the index will show its inclination, (if there be any) in degrees.

Besides its utility, the Indicator possesses a share of elegance, consisting of a neat mahogany frame 9 inches square and glass, encasing a lithographic dial with an appropriate picture in the centre, and the movement is so free that a variation of one fourth of a degree is indicated. They may be sent to any part of the U. S. by Express.

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CURIOUS ARTS

Diamond Microscopes.

Diamond Microscopes were first suggested by Dr. Goring, and have been well executed by Mr. Pritchard. Previous to grinding a diamond into a spherical figure, it should be ground flat and parallel upon both sides, that by looking through it, as opticians try flint glass, we may see whether it has a double or triple refractive power, as many have, which would render it useless as a lens. Among the fourteen different crystalline forms of the diamond, probably the octahedron and the cube are the only ones that will give single vision. It will, in many cases be advisable to grind diamond lenses, plano-convex, both because this figure gives a low spherical aberration, and because it saves the trouble of grinding one side of the gem. A concave tool of cast iron, paved with diamond powder, hammered into it by a hardened steel punch, was employed by Mr. Pritchard. This ingenious artist succeeded in completing a double convex of equal radii, of about 1-25 of an inch focus, bearing an aperture of 1-30 of an inch with distinctness upon opaque objects and its entire diameter upon transparent ones. This lens gives vision with a trifling chromatic aberration; in other respects, like Dr. Goring s Amician reflector, but without its darkness, its light is said to be superior to that of any compound microscope whatever, acting with the same power, and the same angle of aperture. The advantage of seeing an object without *aberration* by the interposition of only a single magnifier, instead of looking at a picture of it with an eye-glass, is evident. We thus have a simple direct view, whereby we shall see more accurately and minutely the real texture of objects.

Electro-Culture.

High expectations were once raised, relative to accelerating the growth of vegetables by electricity. Plats of ground were encircled by wires buried beneath the surface of the soil, and connected with upright pointed conductors, for stimulating the growing plants, —the operator forgetting that the moist soil, being a free conductor of electricity, dissipating in a moment every particle of the fluid that came down the rods

Accurate scientific experiments have been lately made under the supervision of Professor Solly, of the London Horticultural Society, which set the matter finally at rest. A large and powerful cylinder electric machine was used, and the plants, in pots, within doors, were kept heavily charged, four hours each day, for four weeks; and although the experiment was varied in many different ways, not the slightest influence could in ary case be perceived, either favorable or detrimental, to vegetable growth The plants operated upon, several pots of each sort being taken, were young French beans ; young plants of the common scarlet geranium, plants of the strawberry ; seeds of wheat and seeds of mustard and cress Experiments were afterwards made in the open air, on a number of different plants, for nearly six weeks, but not the slighest difference could be observed between those electrified and those not.

Composition for Roofs.

Slack stone lime in a large tub or barrel with boiling water, covering the tub or barrel to keep in all the steam. When thus slacked pass six quarts of it through a fine sieve. It will then be in a state of fine flour. Then to six quarts of this lime, add one quart of rock or Turk's Island salt and one gallon of water, then boil the mixture and skim it clean. To every five gallons of this skimmed mixture, add one pound of alum, half a pound of copperas, by slow degrees add three fourths of a pound of potash, and four quarts of fine sand or hickory ashes sifted. We suppose any kind of hard wood ashes will answer as well as hickory. This mixture will now admit of any coloring matter you please, and may be applied with a brush. It looks better than paint, and is as durable as slate. It will stop small leaks in the roof, prevent the moss from growing on and rotting the wood, and render it incombustible from sparks falling upon it. When laid upon brick work it renders the brick impervious to rain or wet.

The above, which we find in the Maine Farmer, is a good recipe, but it will not take any coloring matter that we may mix with it.— Neither is it so beautiful as paint ; but from what we know of chemistry the composition itself will be a very good cream color by the mixture of sulphate of iron and the lime.

Preserving Grain.

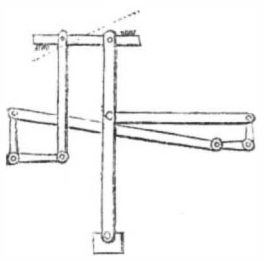
A distinguished agriculturist of Normandy, has made use successfully for the last thirty years, of a process to preserve corn newly cut from the germination which is too often the result of rains which take place between the cutting of the grain and the making it up into sheaves. The Minister of Commerce has just addressed a circular to the perfects to induce them to extend the knowledge of this process, which is as follows :

As the corn is cut, take in several armsful a quantity of stalks, equivalent to five or six sheaves, weighing 15 kilogrammes (40 lbs.) or thereabout, place them standing, so as to form a bundle, to be tied with straw below the head of the grain, open afterwards this bundle at the bottom in order to give it footing as well as to faciliate the circulation of air in the inside, finally cover it with a hat formed of an armful of straw tied as near the bottom as possible, in such a way that it can be put over the bundle of grain, the ears of the corn hanging down towards the earth. By this method, which is similar to the one practised with hemp, the rain glides along down the stalks without penetrating the bundle, even when the rainy season continues for several weeks, the inside of the bundle will remain untouched, and the first day of fair weather may be used to make the grain into sheaves, and it will be found to have suffered no injury except some slight change in the straw on the outside of the bundle.

Farmers who have adopted this custon, have been so well pleased with it that they have extended it to the harvesting of oats and barley, and they practice it even in the most promising states of the weather.

MECHANICAL MOVEMENTS.

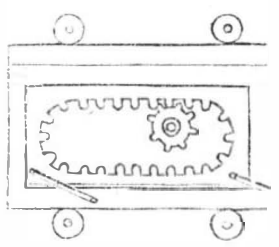
Old Dressing Frame.



The old method first used in dressing warps for the power loom, presented altogether different notions of doing this from the machines used at present. In the above cut we have the brushes used as represented, moving on the warp, one on the top and another below, while the vibration of the bell cranks on the right and left produces the requisite movements of the brushes It will be observed that the motion of the brushes is parallel with the threads end the warp is placed on an angle rising upon the roller, so that the motion of the brushes may be equal on the whole warp.

The dressing frames now used are propelled by a belt which moves two rollers, or beams, by wheels carrying the warp through a reed and a brush extending across the warp. The reed is made of copper, a stout sheet about four inches wide, perforated with smooth holes.— The warp receives its starch from a blanket roller as it leaves the first beam, and under the warp there is a fan which spins around under the warp and drys it before it goes on the moving beam. It requires a great heat to dry warps on the dressing frame, and consequently it is a very unhealthy occupation.— Some factories use pipes heated by steam to dry the warps as they pass on to the beams. There is a small toothed wheel or pinion that strikes a bell during its revolution, measuring a cut of cloth, which the dresser marks with red chalk, so that the weaver knows by said mark on the warp, the exact quantity of cloth woven.

Alternate Traverse Motion.



Here is a plan by which from the same motion of one pinion alternate transverse motion will be communicated to the frame. It will easily be observed that the pinion will travel along the whole notches of the eccentric frame, or rather the frame on the pinion. The rollers on which the frame moves will give ease to the motion. The most perfect of all alternate traversing machines is the self-operating spinning mule, and those who would desire to see such machinery working in an almost perfect manner, should visit our Cotton factories. In one factory at Cohoes, on the Mohawk, there is a room with eight of these machines in operation.

Prevention of Rust in Metals.

The following simple method of coating metals by the agency of an acid, so as to secure them most efficiently from the deteriorating influence of oxidation, is recommended by a correspondent of the Glasgow Practical Mechanic :—

The article to be coated, is first dipped in a dilute acid, composed of two parts sulphuric acid and one of nitric acid, in nine parts of water. After immersion in this solution, the article is to be washed in clean water, precaution being expressly taken to avoid rubbing the metal, or touching it with the fingers. I is then to be allowed to drain, and so soon as it *appears to be dry*, it is to be brushed over with copal or lac varnish; the varnish attaches itself firmly to the acidulated surface of the metal, and never peels off The best species of varnish for this is probably copal, to which is added a little litharge.

Sheet iron thus treated, was subjected to the continued action of sea water for several months without sustaining any injury. It is suggested that a considerable prolongation of the wear of copper on ship's bottoms might result from the application of this method.

New Method of Boring Artesian Wells.

An intelligent artisan named Fauvel, at Perpignan, in France, noticed that in several cases of boring for water with solid iron rods, so soon as the spring was tapped all the triturated particles were brought up without the use of the augur. He inferred, therefore, that if the boring could be effected by a hollow tube, about two inches less in diameter than the width of the augur communicating with an injecting force pump by a flexible tube from the surface, the same result would follow by this application of mechanical power, as resulted from the natural power of the rising column. Being a poor man, it was long before he could get an interest taken in his invention. At last his fellow workmen clubbed together and assisted him in his enterprise, and success attended him in his first experiment. He can bore as much as by the old system in one half the time. Fauvel has now orders for about 200 Artesian wells, and he has carried one 6 inches in diameter to the depth of 540 feet.

An Improvement in Bread-Making.

Persons who are so unfortunate as to be poorly provided with those agents of mastification, (good teeth,) will be glad to know that there is a method of baking bread which obviates the necessity of a hard crust. The crust commonly attached to the loaf is not only troublesome to such persons, but is often the cause of much waste. The way to be rid of it is as follows : When the leaves are moulded, and before they are set down to rise, take a small quantity of clean lard, warm it, and rub it lightly over the loaves. The result will be a crust beautiful and tender throughout. This is not guess-work.

Prepared Chalk.

Take a solution of muriate of lime, and add a solution of carbonate of soda as long as it causes precipitation ; wash the sediment and dry it.

Method of Coating Bobbin Net or Lace with Copper.

Stretch a piece of net or lace by placing a copper wire around it ; then black-lead the lace thoroughly with pure powdered plumbago, using a large camel-hair brush for the purpose; then place the lace between two copper plates, positively electrified, connecting at the same time copper wire round the lace with the negative pole of a galvanic battery. The lace becomes rapidly coated with the copper, which can be electro-gilded or silvered, and will give it a beautiful appearance ; the lace when so covered with a metallic coating, will be useful in the manufacture of little articles, such as jewel cases, &c.

To Measure Hay in the Mow or Stack.

More than twenty years since I copied the following method of measuring hay from some publication, and, having verified its general accuracy, I have both bought and sold hay by it, and believe it may be useful to many farmers, where the means of weighing are not at hand.

Multiply the length, breadth, and height into each other, and, if the hay is somewhat settled, ten solid yards will make a ton. Clover will take from 11 to 12 yards for a ton.— *Alb. Cult.*

The Lacometer.

The Lacometer is a glass tube, marked at equal distances, and is used for testing the quality of milk. The depth of cream is distinctly seen and marked on the glass

The quantity of oil of vitriol annually manufactured in England, Ireland and Scotland, is nearly 70,000 tons.

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